REMARKS

Claims 1-36 are pending in the application. The Office Action rejected each of the claims 1-36. More particularly, the Office Action rejected claims 1-36 as anticipated under 35 U.S.C. § 102 (b) by U.S. Letters Patent 6,002,989 ("Shiba, et al."). The Office Action also objected to Applicants' disclosure as because the Abstract is too long, for the non-conformance of the drawings to the specification; and two typographical errors in the claims. The Office Action also questioned whether Applicants intended to claim priority to two different, co-pending applications. Applicants cure the objections by amendment and traverse each of the rejections.

I. QUESTIONS REGARDING PRIORITY

The Office Action questioned whether Applicants intended to claim the benefit of the earlier filing date for U.S Application Serial No. 09/430,475, filed October 29, 1999, and U.S. Application Serial No. 09/430,476, filed October 28, 1999. Applicant does not choose to claim the earlier effective filing data of these applications. Furthermore, Applicants respectfully submits that a close inspection of those applications, and especially their claims, shows substantive differences between the subject matters of those cases and the present case.

II. OBJECTIONS TO THE CONFORMANCE OF THE DRAWINGS TO THE SPECIFICATION AND THE CLAIMS

A. OBJECTIONS TO THE CONFORMANCE OF THE DRAWINGS TO THE SPECIFICATION

The Office Action objected to the conformance of the drawings to the specification. The objections can be easily cured by a few minor corrections to the drawings. Enclosed are photocopies of the drawings having red line markings showing the changes proposed by

Applicant to cure the objection, for which Applicant requests the Examiner's approval per 37 C.F.R. §1.121 (d), as amended effective November 29, 2000. The corrections include:

- the addition of the reference "430" to FIG. 4 to identify the work station on which the machine interface 535 and equipment interface 510 reside;

- correcting the reference "525" in FIG. 5 to identify the work station on which the machine interface 535 and equipment interface 510 reside to "430";

- correcting the reference "520" to the sensor interface in FIG. 5 to "515"; and

- correcting the reference "525" in FIG. 6 to identify the work station on which the equipment interface 510 resides to "430".

Amendments are also made to the detailed description above to further promote this conformance. Applicants note that no new matter is added by the proposed corrections as all labels are drawn from the original disclosure in the specification.

B. OBJECTIONS TO THE CLAIMS

Objections to the claims are cured by amendment above to correct the typographical errors. Applicants note that one claim has been amended above to correct a typographical error that did not draw an objection.

III. THE CLAIMS ARE ALLOWABLE OVER SHIBA, ET AL.

The Office Action rejected each of the claims 1-36 as anticipated under 35 U.S.C. § 102 (b) by U.S. Letters Patent 6,002,989 ("Shiba, et al."). An anticipating reference, by definition, must disclose every limitation of the rejected claim in the same relationship to one another as set forth in the claim. *In re Bond*, 15 U.S.P.Q.2d (BNA) 1566, 1567 (Fed. Cir. 1990). Applicants respectfully submit that Shiba, et al. fails to meet this stringent standard.

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Shiba, et al. disclose a method for evaluating and setting thresholds used in the inspection of product to find defects, as opposed to generating trace reports. Consequently, many of the limitations recited by Applicants' claims are not taught by Shiba, et al. For instance, the Office Action cites col. 3, line 62 to col. 4, line 16 as teaching "receiving specified data for a trace data report...." This part of Shiba, et al. reads as follows:

> More particularly, in FIG. 4, a plurality of inspection apparatuses A to D having different performances and for inspecting, for example, semiconductor wafers are connected through a network 8 and *failure mode data obtained by the inspection apparatuses such as, for example, sizes, features, positional coordinates and the total number of extraneous substances on the wafers* are collected into a data collection system 2. The failure mode data are supplied to a data base 2 and when a predetermined term elapses, contents of the data base 3 are updated. The failure mode data are supplied from the data collection system 2 to inter-apparatus correlation degree calculation means 4 and failure occurrence frequency calculation means 5, which calculate a correlation degree among the inspection apparatuses and a failure occurrence frequency. *There is provided means 6 for selecting an optimum inspection apparatus and calculating an optimum inspection frequency on the basis of the calculated result data of the calculation means 4 and 5.* An inspection apparatus group management system 7 manages and controls the inspection apparatuses A to D on the basis of the calculated result of the optimum inspection apparatus/optimum inspection frequency calculation means 6.

(emphasis added) The passage contains no mention of a trace data report or trace data, both of which the Office Action cites it.

Applicants' review of the cited portions of Shiba, et al. fails to turn up any mention of a trace data report, much less the generation of a trace data report. The "failure mode data" gathered in Shiba, et al. is instead used to evaluate the performance of inspection machines. (col. 3, line 62 to col. 4, line 16) The data never makes into any kind of a report. The Office Action specifically cites col. 6, lines 30-64 for teaching the limitation of "formulating the trace data report responsive to the request". This passage reads:

When the collated (overlapped) result of failures is displayed by the Ben's diagram, the Ben's diagram can be broadly classified into four cases as shown in FIGS. 5 to 8. The sizes of circles 10a to 10d and 11a to 11d represent the number of failures detected by the inspection apparatuses A and B, respectively. The areas of overlapped portions (hatched portions) 14a to 14d of two circles represent the number of failures detected in common by the inspection apparatuses A and B.

It is now defined that the numbers of failures detected by the inspection apparatuses A and B are Na and Nb, respectively, and the number of failures detected in common by both of them is Nab. The number Nall of failures detected by at least any one of the inspection apparatuses A and B is defined by the following equation (1):

$$Nall = Na + Nb - Nab \quad (1)$$

The presence of the correlation degree between the two apparatuses is calculated by the equations (2), (3) and (4). R1 represents a detection ratio of the inspection apparatus B to the number of failures detected by the inspection apparatus A (equation (2)). R2 represents a capture ratio of the inspection apparatus A to the total number of failures (equation (3)). R3 represents a detection ratio of common failures to the number of failures detected by the inspection apparatus A (equation (4)). Thresholds T1 to T3 (for example, 0.9 for each threshold) are set for the ratios R1 to R3, respectively.

$$R1 = Nb/Na \quad (2)$$

$$R2 = Na/Nall \quad (3)$$

$$R3 = Nab/Na \quad (4)$$

Applicants note that there is no mention of a trace report, nor formulating any kind of report in this passage. Hence, the passage fails to disclose "formulating the trace data report responsive to the request" as is recited in all of the independent claims in at least some variation. (claim 1, line 7; claim 7, line 7; claim 15, line 8; claim 23, lines 7-9; claim 30, lines 8-11)

Thus, Shiba, et al. fails to disclose generating a trace data report or even mention a trace data report, as is recited in all the independent claims. Applicants respectfully submit that the

construction of Shiba, et al. in the Office Action to the contrary is mistaken. Since an anticipating reference must disclose every limitation of the claims, Shiba, et al. fails to anticipate claims 1-36.

CONCLUSION

Applicants accordingly respectfully submit that the application is in condition for allowance and request the a Notice of Allowance be issued for this application.

The Examiner is invited to contact the undersigned attorney at (713) 934-4053 with any questions, comments or suggestions relating to the referenced patent application.

Respectfully submitted,

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Rewritten Paragraphs
(Clean Versions)

"Clean" versions of the replacement paragraphs pursuant to 35 U.S.C. § 1.121 (b)(1)(ii), as amended effective November 29, 2000, are set forth below.

In the Abstract:

The invention is, in its various aspects, a method and apparatus for dynamically generating trace data reports in a semiconductor fabrication process employing fault detection control. The method comprises specifying data including at least one of a parameter, a trigger, and a frequency, for a trace data report; automatically generating from a fault detection controller a request including the specified data to a report generator; formulating the trace data report responsive to the request; and returning the formulated trace data report from the report generator based on the request. The apparatus is a semiconductor fabrication processing system, comprising: a fabrication tool capable of providing at least one of specified data and a trace data report; a fault detection controller capable of automatically generating a request for the trace data report, the request including the specified data; a report generator capable of requesting at least one of the specified data and the trace data report from the fabrication tool and capable of, if the specified data is requested from the fabrication tool, providing the trace data report; and an operator interface for receiving data specified for the trace data report, the specified data including at least one of a parameter, a trigger, and a frequency for the trace data report, and to which the trace data report may be returned from at least one of the report generator and the fabrication tool.

In the specification:

For the paragraph on p. 12, lines 2 – 20:

In this particular embodiment, the APC System also includes a **Plan Execution Manager** ("PEM," not shown), which is the component primarily responsible for "choreographing" the operation of the APC System 402. This involves interpreting APCFW Plans, executing main scripts and subscripts, and invoking event scripts as events dictate. A variety of plans, scripts,

and subscripts may be used in various implementations. For instance, the present embodiment includes, but is not limited to, the following plans:

- data collection plan - a data structure used exclusively by a sensor interface and machine interface defined by the PEM, the requirements in which what data should be collected from a specific processing equipment, and how that data should be reported back to PEM;

- duration plan – defines the trigger conditions and the delays when triggers (*i.e.*, conditions that causes add-on sensors to act upon, *e.g.*, start data collection, stop data collection) happen;

- reporting plan – defines what to do with the collected data, as well as when to signal the data's availability; and

- sampling plan – defines the frequency at which the data is to be collected by the external sensor;

However, the number and function of various plans, scripts, and subscripts will be implementation specific.

For the paragraph at p. 12, line 29 to p. 13, line 2:

The PEM then delegates responsibility to run the plan to a Plan Executor ("PE") 542. The PE 542 sequentially executes the plan and reports completion of the plan or errors in the execution of the plan to the PEM. Thus, while the PEM is responsible for the overall management of all plans executed, a PE 542 is responsible for running only one plan. The PE 542 is created by the PEM, exists for the life of the plan, and is destroyed by the PEM after reporting that the plan is completed or aborted. Each PE 542 executes a main script and zero or more event scripts. A PEM can start multiple plans concurrently via multiple Plan Executors 542.

The rewritten claims are presented below in "clean" form pursuant to 35 U.S.C. § 1.121

(c)(1)(i), as amended effective November 29, 2000.

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23. (Amended) A semiconductor fabrication processing system, comprising:

a fabrication tool capable of providing at least one of specified data and a trace data report;

a fault detection controller implementing a fault detection control, the fault detection controller being capable of automatically generating a request for the trace data report, the request including the specified data;

a report generator capable of requesting at least one of the specified data and the trace data report from the fabrication tool and capable of, if the specified data is requested from the fabrication tool, providing the trace data report; and

an operator interface for receiving specified data for the trace data report, the specified data including at least one of a parameter, a trigger, and a frequency for the trace data report, and to which the trace data report may be returned from at least one of the report generator and the fabrication tool.

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30. (Amended) An advanced process control, semiconductor fabrication processing system, comprising:

means for fabricating a wafer, the fabricating means being capable of providing at least one of specified data and a trace data report;

means for implementing a fault detection control, the fault detection control means being capable of automatically generating a request for the trace data report, the request including the specified data;

means for generating a report, the report generating means being capable of requesting at least one of the specified data and the trace data report from the fabricating means and capable of, if the specified data is requested from the fabricating means, providing the trace data report; and

means for interfacing with an operator, through which an operator may specify the data for the trace data report, the specified data including at least one of a parameter, a

trigger, and a frequency for the trace data report, and to which the trace data report may be returned from at least one of the report generating means and the fabricating means.

35.   (Amended) The semiconductor fabrication processing system of claim 30, wherein at least two of the fault detection means, the interfacing means, and the report generating means reside on the same computer.

600 →

645

Populate Data
Store

570

Data
Store

Request and 635
return available
parameters

550

Fault
Detection
Controller

Return 640
formulated trace
data report

430

Operator
specifies data for
a trace data
report

610

620

Report definition
sent to Equipment
Interface; Trace data
report returned

430
525

510

625

410

Request available
parameters or request
defined report; Return
same

Fabrication
Tool

Equipment
Interface
Report
Generator

560

Fig. 6

400 →

402

440

430

420

410

420

405

405

Fabrication Tool

Fig. 4

400 →

402

440

430

Operator Interface — 530

APC System Manager — 540

430
525

Plan Executor — 542

Machine Interface — 535

Fault Detection Controller — 550

420

Equipment Interface — 510

Report Generator — 560

Data Store — 570

410

Application Interface — 545

Sensor Interface
515
520

Fig. 5